

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NORTH CAROLINA, WESTERN DIVISION

GRAHAM YATES and
BECKY YATES,

Plaintiffs,

vs.

AIR & LIQUIDS SYSTEMS
CORPORATION, et al.,

Defendants,

File No. 5:12-cv-00752-FL

**DEFENDANT HONEYWELL INTERNATIONAL INC.’S DAUBERT MOTION AND
BRIEF TO PRECLUDE EVIDENCE SUGGESTING THAT BRAKE DUST CAUSES
PLEURAL MESOTHELIOMA OR THAT “EVERY EXPOSURE COUNTS”**

Defendant, Honeywell International Inc., f/k/a Allied Signal, as successor in interest to Allied Corporation, as successor in interest to The Bendix Corporation (“Honeywell”) requests the Court exclude testimony that exposure to brake dust or chrysotile asbestos from brakes causes pleural mesothelioma or that “every exposure to asbestos” above background was a substantial contributing factor to the development of Plaintiff Graham Yates’ alleged mesothelioma.

INTRODUCTION

This Court should exclude the causation testimony of Plaintiffs’ designated causation expert, Dr. Eugene Mark, because his opinions fail the *Daubert* standard for scientific reliability.¹ His opinions are not based on any coherent, reproducible or testable scientific

¹ Plaintiffs have also retained Dr. Arnold Brody. Dr. Brody is not a medical doctor and is not expected to offer any case specific opinions. Nevertheless, for the reasons articulated in this Motion, Dr. Brody should also not be permitted to testify that exposure to brake dust or processed chrysotile asbestos from brakes causes pleural mesothelioma or that “every exposure to asbestos” above background was a substantial contributing factor to the development of Plaintiff Graham Yates’ alleged mesothelioma. Additionally, although wholly unqualified, Mr. Steve Hays (Plaintiffs’ industrial hygienist) has also offered causation opinions that Mr. Yates’ alleged exposures to asbestos from Defendants’ products exceeded background levels, and therefore caused Mr. Yates’ mesothelioma.

methodology or principle for determining causation, much less on any generally accepted methodology. Dr. Mark couches his causation opinion in terms of what he calls “special exposures,” but is essentially expected to provide unreliable testimony that *every exposure* to asbestos above background causes disease. This theory is a litigation-driven hypothesis that is not based on any case-controlled data, testing, peer-reviewed literature, or scientific principle.

Dr. Mark defines a “special exposure” as one for which there is scientific reason to conclude that such an exposure creates a risk of developing the disease. *See Yates v. Air & Liquid Systems Corp., et al.*, Vol. I, Deposition of Eugene Mark, M.D., taken on March 16, 2015 at 48. [Doc. No. 296-1]. However, Dr. Mark’s special exposure requirement is in theory only. A diagnosis of mesothelioma is enough for him to conclude that that exposure to asbestos caused his mesothelioma. *See id.* at 75-76 (“[A]sbestos is the *prima facie* cause of diffuse malignant mesothelioma, and if that person had been exposed to asbestos... I would conclude that that exposure to asbestos caused his diffuse malignant mesothelioma.”); August 1, 2013 Report and Declaration of Eugene Mark, M.D., at 10-11 (“Diffuse malignant mesothelioma is a disease in which the disease itself, with a reasonable degree of medical certainty, tells one the cause.”), attached as **Exhibit D**.² His theory relieves him of any duty to differentiate among asbestos fiber types, which have highly varying potencies, or to even estimate the quantity of brake dust to which Mr. Yates was potentially exposed. Dr. Mark ignores other potential causes of pleural mesothelioma, which is not only a signal that his methodology is flawed generally, but is

To the extent Mr. Hays may attempt to offer such opinions at trial, such testimony should be precluded for the reasons set forth herein.

² Judge Tereshko of the Philadelphia County Court of Common Pleas excluded Dr. Mark’s every exposure opinion finding that his “own words reveal that he comes to the “right” conclusion first and then decides which “methodology” will support the conclusions. *In re: Asbestos Litigation*, Judge Tereshko’s Findings, Memorandum and Order, September 24, 2008, at 21, attached as **Exhibit E**.

especially egregious in the case of Mr. Yates.³ The each and every exposure opinion that Dr. Mark will espouse renders the “substantial factor” causation standard meaningless, bypasses accepted methodologies for evaluating cause, and shifts the burden of proof so that Honeywell has to disprove causation.

Just last month, a trial court in New York joined the growing number of federal and state courts around the country that reject the unscientific “each and every exposure” theory of causation. *Juni v. A.O. Smith Water Products, et al.*, Decision and Order of Supreme Court of New York (April 13, 2015) (holding that Plaintiff’s theory was both directly contrary to New York law and irreconcilable with the scientific understanding that the risk of developing a disease increases or decreases depending on the amount, duration, and frequency of exposure), attached as **Exhibit F**. This Court should likewise reject the testimony as inherently unreliable and contrary to established principles for establishing causation. Honeywell understands that the Court has set aside June 2-3, 2015 for an evidentiary hearing to consider further evidence on the generally accepted scientific methodologies at issue and those methodologies Dr. Mark claims to rely upon to reach his opinions.

STATEMENT OF THE CASE

Mr. Yates served in the Navy on active duty from 1958 to 1960. During this time, he lived aboard ship on the U.S.S. Jonas Ingram. Video Deposition of Graham Yates, taken on 2/13/13, at 31-32. [Doc. No. 296-2] He testified to visiting two crew members in the engine spaces “all the time.” *Id.* He was transferred to the U.S.S. Clarence K. Bronson in 1960 during its decommissioning. He testified that he was in the engine rooms “every day” for “one to several hours.” *Id.* 34-35. Several other trades performed work in the engine rooms while he performed

³ Mr. Yates was exposed to amosite asbestos in the Navy, a more potent form of asbestos than the chrysotile asbestos used in Bendix brakes.

his own work, including engineers, machinists mates, boiler tenders, and electricians. *Id.* at 37. Mr. Yates was also present for the removal of insulation from steam pipes. Discovery Deposition of Graham Yates, taken on 2/13/13, at 58-59, attached as **Exhibit G**. Dr. Mark opines that Mr. Yates' exposure to amosite in the Navy played a substantial role in the development of his diffuse malignant mesothelioma. Vol I, Deposition of Mark, at 29.⁴ [Doc. No. 296-1]

At the age of 73, Mr. Yates developed pleural mesothelioma. Pleural mesothelioma is a rare form of cancer that develops in the mesothelium, a protective lining that covers the chest (pleura). There are some known and suspected causes of mesothelioma, including exposure to amphibole asbestos, which includes the amosite asbestos used in thermal insulation on Navy ships. Carbone, M., Dodson, R., et al., "Malignant Mesothelioma: Facts, Myths and Hypotheses," *Journal of Cellular Physiology*, 2011, attached as **Exhibit H**. Therapeutic radiation and erionite are also known causes of pleural mesothelioma. In addition, like other cancers, mesothelioma occurs spontaneously, and without exposure to environmental agents such as asbestos. Carbone, M., Dodson, R., et al., "Malignant Mesothelioma: Facts, Myths and Hypotheses," *Journal of Cellular Physiology*, 2011; see *Yates v. Air & Liquid Systems Corp., et al.*, Vol. III, Deposition of Eugene Mark, M.D., taken on April 27, 2015 at 234, (in which Dr. Mark testified that cells are able to mutate in the human body without exposure to an environmental agent), attached as **Exhibit B**.

⁴Dr. Mark reviewed Plaintiff's deposition testimony prior to the first day of his deposition in this case and before reaching his opinion regarding Mr. Yates' Navy exposures. Following the first day of Dr. Mark's deposition, Plaintiff's attorney met with Dr. Mark and suggested that Mr. Yates did not have any known exposure to asbestos while serving in the Navy (despite Mr. Yates' own deposition testimony to the contrary and Dr. Mark's interpretation of that testimony, as indicated in his report). See August 1, 2013 Expert Report and Declaration of Eugene Mark, M.D., at 1, 5 [Exhibit D] ("Mr. Graham was exposed to asbestos-containing dust from ... thermal insulation while decommissioning a ship during his time in the Navy"). As a result of his conversation with Plaintiff's attorney, Dr. Mark testified that the Navy exposures were contributory to Mr. Yates' mesothelioma if there was evidence that Mr. Yates was exposed to asbestos while in the Navy. Dr. Mark agrees, though, that Mr. Yates described dust being present while work was done with insulation products during his service in the Navy. See *Yates v. Air & Liquid Systems Corp., et al.*, Vol. II, Deposition of Eugene Mark, M.D., taken on April 6, 2015 at 135-39, as **Exhibit A**.

Plaintiffs also allege that Mr. Yates developed mesothelioma as a result of exposure to asbestos from work with and around brakes, clutches, and gaskets. Specific to Bendix brakes, Mr. Yates testified that from 1956 to 1957, he worked as a gas station attendant at two Esso gas stations pumping gas, washing cars and windshields, putting in oil, and helping mechanics. Video Deposition of Graham Yates, at 71.⁵ [Doc. No. 296-2] Mr. Yates did not perform any maintenance work at either gas station. *Id.* at 71. On occasion, he fetched parts or handed tools to the mechanics doing brake work. *Id.* at 76. He alleges that the replacement brakes were Bendix brakes. *Id.* at 78. Additionally, as a clerk in the parts warehouse at North Carolina Equipment Depot from 1960 to 1962, Mr. Yates testified that he fetched Bendix replacement brakes in the warehouse and brought them to delivery truck drivers. His only contact with the brakes was to open the box when he pulled them in the warehouse and again when he verified them with the drivers. *Id.* at 82-85. Mr. Yates also testified to performing two brake changes on the front brakes only, one in 1960 and one in the 1950s, in which he used Bendix replacement brakes. *Id.* at 19-20, 24-25.

Chrysotile was the only type of asbestos used in Bendix brakes.⁶ The medical and scientific literature reports significant differences between brake dust and raw chrysotile.

Studies have shown that thermal treatment and mechanical manipulation of chrysotile alters its surface and structure. Surface conditions created on brake pads both heats and tears down the fiber. Chrysotile subject to these severe conditions cannot, and does not, retain its natural properties. Chrysotile biological activity is thereby greatly reduced and can become virtually nil hundreds of degrees below the olivine transformation point.

⁵ Dr. Mark testified at his deposition in this case that Mr. Yates likely did not have any exposure to asbestos from pumping gas, washing cars and windshields, and putting oil in cars. *See* Vol. I, Mark Deposition, at 85-86. [Doc. No. 296-1]

⁶ There is a continuing and very vigorous debate over whether raw chrysotile asbestos, even at extremely high doses, ever causes pleural mesothelioma.

Langer, AM. "Reduction of the biological potential of chrysotile asbestos arising from conditions of service on brake pads." *Regulatory Toxicology and Pharmacology* (2003) 38:71-77 at 76, attached as **Exhibit I**; *see also* Fisher, GI. Mossman, BT, McFarland, AR, Hart, RW. "A Possible Mechanism of Chrysotile Asbestos Toxicity," *Drug and Chemical Toxicology* (1987) 10(1&2)109-131 at 110, 111 ("The results, in a number of different cell types and bioassays with different endpoints, show that biological effects of chrysotile can be diminished by heating."), attached as **Exhibit J**; Fubini, B. "Surface Reactivity in the Pathogenic Response to Particulates." *Environmental Health Perspectives* (1997) 105 (Suppl 5)1013-11)20 at 1014 ("[P]rolonged grinding deeply modifies and inactivates chrysotile asbestos."), attached as **Exhibit K**. Even the brake manufacturing process involves significant heat and pressure that impacts the biologic potential of chrysotile in brakes.

Dr. Mark agrees that studies show that thermal treatment and mechanical manipulation of chrysotile alters both its surface and structure and that service conditions created on brake pads both heat and tear down the chrysotile fibers. *See Vol. I, Mark Deposition*, at 42-43. [Doc. No. 296-1] Dr. Mark also believes that the "severe conditions" of the braking process can change the natural properties of chrysotile. *See id.* at 43. However, Dr. Mark does not know how much the biological activity of chrysotile is reduced from the braking process and therefore cannot consider any such changes in reaching a causation opinion in this case. *See id.* at 44.

A recent short term animal inhalation study also demonstrated that brake dust does not have any significantly different effect in the lung and pleura than normal air, and that brake dust does not cause the same biologic reactions in the lung or pleura as raw amphibole asbestos fibers. Bernstein, D., et al, "Evaluation of the deposition, translocation and pathological response of brake dust with and without added chrysotile in comparison to crocidolite asbestos

following short-term inhalation: Interim results,” Toxicology and Applied Pharmacology 276:28-46, 2014, attached as **Exhibit L**; Bernstein DM, et al., “Evaluation of the fate and pathological response in the lung and pleura of brake dust alone and in combination with added chrysotile compared to crocidolite asbestos following short-term inhalation exposure,” Toxicology and Applied Pharmacology 283:20-34, 2015, attached as **Exhibit M**. Dr. Mark did not review this study in reaching his opinions in this case. *See* Vol. II, Mark Deposition at 170-71. [Exhibit A] This first of its kind study only highlights the flaws in the methodology utilized by Dr. Mark. Dr. Mark does not consider the differences in brake dust. His simple, unscientific theory of causation allows him to ignore these and other important factors that are well-established by *Daubert* and its progeny.

STANDARD OF REVIEW

Plaintiffs bear the burden of proving the admissibility of their experts’ testimony. In determining whether plaintiffs have met their burden of establishing the admissibility of expert evidence, the trial judge must determine whether the testimony has “a reliable basis in the knowledge and experience of [the relevant] discipline.” *Daubert v. Merrell Dow Pharmaceuticals, Inc. (Daubert I)*, 509 U.S. 579, 592 (1993). In *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, the Supreme Court of the United States construed Rule 702 to impose on federal courts the gatekeeping role of ensuring “that any and all scientific testimony or evidence admitted is not only relevant, but reliable.”⁷ In performing its duty as “gatekeeper,” the trial judge must determine whether or not the underlying proposed expert testimony is scientifically

⁷ *Daubert I*, 509 U.S. at 597; *see* Federal Rule of Evidence 702:

“If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.”

valid, amounts to “scientific knowledge,” constitutes “good science,” and is “derived by the scientific method.”⁸ In addition to meeting the *Daubert* standard, any proffered expert opinion must “assist the trier of fact in understanding the evidence or in determining a fact in issue.”

Daubert held that courts should consider five criteria when determining the admissibility of expert testimony: (1) whether the proffered knowledge can be or has been tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) the known or potential rate of error; (4) the existence and maintenance of standards controlling the technique’s operation; and (5) whether the theory or technique has gained general acceptance in the relevant scientific community.⁹ A trial court should make findings on each of the relevant factors concerning whether expert testimony is scientifically reliable in order to properly exercise its discretion. *See Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 159 (1999) (Scalia, J., concurring) (“[I]n a particular case[,] the failure to apply one or another of [the *Daubert* factors] may be unreasonable, and hence an abuse of discretion.”).

The rationale behind the *Daubert* standard is to ensure that an expert employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.¹⁰ Its overarching subject is the scientific validity—and thus the evidentiary relevance and reliability—of the principles that underlie a proposed submission. The focus, of course, must be solely on *principles and methodology*, not on the *conclusions* that they generate.¹¹

⁸ *Daubert v. Merrell Dow Pharmaceuticals, Inc. (Daubert II)*, 43 F.3d 1311, 1316 (9th Cir. 1995).

⁹ See *Daubert I*, 509 U.S. at 592- 94.

¹⁰ See *Kumho Tire Co.*, 526 U.S. at 152.

¹¹ See *Daubert I*, 509 U.S. at 594-95.

This Court should evaluate whether the causation opinions that Dr. Mark reaches in this case are based on a scientific and reliable methodology as a prerequisite to allowing the jury to consider the weight of competing expert testimony.

ARGUMENT

I. DR. MARK'S OPINIONS ARE NOT BASED ON SCIENTIFICALLY DEFENSIBLE METHODOLOGIES AND ARE UNRELIABLE

Dr. Mark theorizes that each and every “special” exposure to asbestos above background (the dose of asbestos experienced by the general population) causes mesothelioma—no matter the type of asbestos or the dose.¹² However, Dr. Mark has failed to articulate any scientifically defensible methodology he uses to conclude that every “special” exposure to asbestos counts as a substantial contributing cause to the development of Mr. Yates’ mesothelioma.¹³ In fact, Dr. Mark previously testified in the Philadelphia hearing that led to his opinion being excluded, “[m]ethodology, as we understand it today scientifically, is asbestos; asbestos, and *the disease is the methodology.*” Frye Hearing, February 11, 2008 (Afternoon Session), *Chrysler Asbestos Litigation*, at 21. [Doc. No. 296-8] This is no methodology at all, and certainly does not satisfy the *Daubert* elements.

¹² Asbestos is a naturally occurring mineral which is common in our environment. The federal government and others estimated that more than 40% of the land area of the United States is comprised of minerals that may contain asbestos. Because most humans take in excess of 20,000 breaths each day in an environment where there are billions of invisible, but respirable, dust particles in the air, chrysotile asbestos is found in virtually every person’s lungs. The National Research Council (NRC) reported that, among the general population in this country, the typical lifetime exposure to asbestos was expected to be about 100 million fibers. Dr. Mark has testified that almost everyone, particularly those over the age of 50, such as Mr. Yates, has asbestos fibers in their lungs. See Vol. I, Mark Deposition, at 79. [Doc. No. 296-1]

There is no scientific evidence that background exposure to chrysotile asbestos fibers results in a dose that causes or contributes to the development of pleural mesothelioma. Bogovski, P., et al., “Biological Effects of Asbestos,” IARC Scientific Publications No. 8, (1973). Dr. Mark does not dispute this. See *Hampton v. Ford Motor Company*, et al., Trial Testimony of Eugene Mark, MD, 8.19.14, at 1207-08. [Doc. No. 296-5]

¹³ As an example of Dr. Mark’s fundamental lack of support for his causation opinions, he describes causation as “a basic philosophic process,” yet he has not read nor is he able to cite to any philosophical writing that supports this statement. See Vol. III, Mark Deposition , at 209-14. [Exhibit B]

Dr. Mark defines his litigation-derived term, “special exposure,” as an exposure for which there is scientific evidence to conclude that such an exposure creates a risk of developing the disease.¹⁴ See Vol. I, Mark Deposition , at 48 [Doc. No. 296-1]; *see also Lawson (Rehrig) v. ACandS, et al.*, Deposition Testimony of Eugene Mark, 12.17.2009, at 11. [Doc. No. 296-9] This special exposure requirement is in theory only. Even a reliable history of asbestos exposure is not necessary for him to determine that a person’s mesothelioma is asbestos related. The diagnosis itself is sufficient for him to opine that a person had a special exposure to asbestos:

Q. So at the time you authored this report, then, there was no special exposure that you were aware of that Mr. Erts had experienced, correct?

A. There was some special exposure because he developed the signal disease, but what special exposure or exposures there were, I did not know.

Q. And that's because you, upon the diagnosis of diffuse malignant mesothelioma, you assume that a person had a special exposure to asbestos, correct?

A. Yes.

Erts V. A.W. Chesterton Company, et al., in the Circuit Court of the 15th Judicial Circuit in and for Palm Beach County, Florida (March 25, 2011). [Doc. No. 296-10] Dr. Mark believes that because Mr. Yates developed mesothelioma, the cause of his tumor was necessarily asbestos exposure. See Vol. I, Mark Deposition, at 75-76 [Doc. No. 296-1] (“[A]sbestos is the prima facie cause of diffuse malignant mesothelioma, and if that person had been exposed to asbestos... I would conclude that that exposure to asbestos caused his diffuse malignant mesothelioma.”); August 1, 2013 Report and Declaration of Eugene Mark, M.D., at 10-11 [Exhibit D] (“Diffuse

¹⁴ Dr. Mark is not aware of any other expert in the medical and scientific community that uses the term “special exposure” to describe asbestos exposures as a cause of diffuse malignant mesothelioma. The term is also not found in the peer-reviewed medical and scientific literature on diffuse malignant mesothelioma. See Vol. I, Mark Deposition, at 48-49. [Doc. No. 296-1]

malignant mesothelioma is a disease in which the disease itself, with a reasonable degree of medical certainty, tells one the cause.”).

The flaws of this unscientific “method” are clear. First, the theory actually contradicts Dr. Mark’s admissions that mesothelioma is a dose response disease¹⁵ and that amosite and crocidolite are more potent carcinogens than chrysotile (and that chrysotile requires a greater dose to cause mesothelioma). *See Vol. I, Mark Deposition, at 37, 44-45, 61 [Doc. No. 296-1]; Mahoney v. Georgia Pacific Corporation, California, February 22, 2008, at 370-71. [Doc. No. 296-11]* Under his “methodology,” these factors are irrelevant; *see also Dixon v. Bondex International, et al, Consolidation No. 24X07000532, Baltimore City, (April 15, 2010), at 62, 77. [Doc. No. 296-14]*

Instead, he avoids the critical issue of dose and the significance of fiber type by relying on the premise that “diagnosis is a signal tumor, or a signal diagnosis. That is the diagnosis, itself, indicates essentially its causation.” Frye Hearing, Philadelphia, Testimony of Dr. Mark, (February 11, 2008). [Doc. No. 296-15] Dr. Mark reaches his causation opinions in this case without an estimate of Mr. Yates’ cumulative exposure to asbestos, or to Bendix brakes specifically. *See Vol. I, Mark Deposition, at 80 [Doc. No. 296-1]; Yates v. Air & Liquid Systems Corp., et al., Vol. III, Deposition of Eugene Mark, M.D., taken on April 27, 2015 at 286, as Exhibit B; see Juni v. A.O. Smith Water Products, et al., Decision and Order of Supreme Court of New York, at 32 (April 13, 2015) (“Absent knowledge of the amount, duration, or frequency of Juni’s exposures to asbestos-containing dust from brakes . . . sold or distributed by defendant,*

¹⁵ In fact, Dr. Mark does not know whether there is even a linear dose response at very low levels of asbestos exposure. *Yates v. Air & Liquid Systems Corp., et al., Vol. IV, Deposition of Eugene Mark, M.D., taken on April 28, 2015 at 352-53, as Exhibit C.*

[the expert] could not and did not establish a dose-response relationship or even minimally quantify Juni's exposures."), attached as **Exhibit F.**¹⁶

Dr. Mark concedes that there are exposures to asbestos that do not contribute to the development of mesothelioma and calls them "trivial exposures." Dr. Mark distinguishes special exposures from "trivial exposures," another term he created to describe those exposures for which there is no scientific evidence that they increase the risk of developing mesothelioma. *See Vol. I, Mark Deposition, at 49. [Doc. No. 296-1]* Trivial exposures are safe and do not contribute to disease. *Nelson, et al. v. Allied Packing & Supply, Inc.*, Deposition Testimony of Eugene Mark, M.D., taken on 6/25/13, at 90-91. [Doc. No. 296-12] Nonetheless, Dr. Mark's distinction between trivial and special exposures is arbitrary and cannot be tested. *See Vol. III, Mark Deposition, at 214 [Exhibit B]* (in which he testified that the distinction between a trivial exposure and a special exposure to asbestos cannot be tested because "you cannot test concepts").

Dr. Mark considers intensity and duration of exposure to be important factors in distinguishing special from trivial exposures. However, he does not evaluate these factors in an accurate or reliable manner. *See Vol. I, Mark Deposition, at 44-45. [Doc. No. 296-1]* With respect to duration of exposure to Bendix brakes from opening brake boxes, he considers the duration of exposure to be three years, from 1960 to 1962, the entire length of Mr. Yates' employment at the North Carolina Equipment Depot. *See Vol. II, Mark Deposition, at 153. [Exhibit A]* He uses this duration of exposure in reaching his opinions in this case despite

¹⁶ Dr. Mark testified that he does not know how much any exposure to asbestos from brakes increased Mr. Yates' risk of developing mesothelioma. *See Vol. I, Mark Deposition, at 99 [Doc. No. 296-1]* ("I don't know how much it increased it. I don't know whether it increased it by one one-thousandth [of one percent]. I don't know whether it increased it by one over 999."). Dr. Mark would thus have to guess in order to fulfill his own requirement for special exposure: scientific evidence to conclude that such an exposure creates a risk for developing the disease.

conceding that it “would be a fair conclusion” that Mr. Yates would have only had *dozens of seconds of exposure* to asbestos from opening Bendix brake boxes. *Id.* Moreover, Dr. Mark determines intensity of exposure by using a total dust standard which does not differentiate between asbestos dust and other types of dust. *Id.* at 155. Dr. Mark agrees that there could have been dust in the boxes other than asbestos and that he has not seen any tests on the dust in the boxes that Mr. Yates opened. *Id.* at 155-56. His use of the total dust standard is particularly problematic due to the nature of asbestos fibers in brakes. Dr. Mark is aware that resins were used in asbestos-containing brakes and agrees that asbestos fibers surrounded by resin would not become airborne and contribute to mesothelioma. *See Vol. III, Mark Deposition, at 246. [Exhibit B]* Further, he concedes that he does not know the percentage of asbestos in brakes that are bound to resin. *Id.* at 246-47. Nevertheless, he assumes that the resultant dust contains the same percentage of asbestos as the percentage of asbestos in the brakes themselves. *See Vol. II, Mark Deposition, at 156-57 [Exhibit A]; see Juni, at 33 [Exhibit F] ([T]he “vast majority” of studies assessing the composition of debris formed from work on brakes reflects that 99 percent of the asbestos is converted to a non-toxic substance during the process. Thus, when a worker claims exposure to a cloud of dust formed while working on a brake, that dust is composed of one percent asbestos.”). Dr. Mark’s effort to qualitatively assess Mr. Yates’ exposure is lacking, and points to no scientific evidence that reliably demonstrates that such an exposure creates a risk for developing mesothelioma.*

Moreover, Dr. Mark believes that ambient exposures are not sufficient in and of themselves to cause mesothelioma. *Hampton v. Ford Motor Company, et al.*, Trial Testimony of Eugene Mark, MD, 8.19.14, at 1207-08. [Doc. No. 296-13] However, without testimony regarding Mr. Yates’ alleged dose from defendant’s products, and an assessment of Mr. Yates’

“background or ambient levels” of exposure, Dr. Mark does not have a foundation on which to opine that Mr. Yates’ alleged exposure from defendant’s products was actually above background levels or that it substantially contributed to the development of Mr. Yates’ mesothelioma. Without some meaningful quantification of exposure, or dose-response estimate, Dr. Mark’s causation opinions are nothing but unsubstantiated personal (not scientific) opinions.¹⁷ This type of speculative and unsubstantiated testimony should not reach a jury in this Court.

II. DR. MARK’S THEORY OF CAUSATION FAILS ALL OF THE *DAUBERT* FACTORS

Dr. Mark has failed to articulate any scientifically defensible methodology to support his conclusion that every exposure to brake dust from Bendix brakes must be deemed a substantial contributing cause to the development of mesothelioma. His opinions do not satisfy any of the *Daubert* elements.

A. The Theory Cannot Be Tested or Proven True or False.

“[I]n order to qualify as ‘scientific knowledge,’ an inference or assertion must be derived by the scientific method.” *Daubert*, 509 U.S. at 590. “Scientific methodology today is based on generating hypotheses and testing them to see if they can be falsified; indeed, this methodology is what distinguishes science from other fields of human inquiry.” *Id.* at 593 (quotation and citation omitted). The medical and scientific community does not know the exact cause or mechanisms of cancer at the cellular level. As a result, it is not possible to know which, if any, of the fibers to which an individual is exposed are the causative fibers. There is no way to track

¹⁷ Numerous courts have applied the dose-response requirement in connection with the substantial contributing cause legal requirement. See, e.g., *Sholtis v. American Cyanamid Co.*, 238 N.J. Super. 8, 25, 30-31 (App. Div. 1989); *Lindstrom v A-C Prod. Liab. Trust*, 424 F.3d 488, 492, 493 (6th Cir. 2005) (requiring evidence of substantial exposure for a substantial period of time at a high enough level to support an inference that the asbestos exposure was in fact a substantial factor and not merely conjectural in nature; plaintiff’s expert’s opinion (based on the “every breath/exposure” theory) did not establish a basis for causation as to any particular defendant).

those fibers to a specific defendant's product. Consequently, given the current state of scientific knowledge, on the level of molecular biology, the every exposure theory can be neither falsified nor validated. It remains an unproven hypothesis.¹⁸

Since the every exposure hypothesis has not been verified or validated through testing, it does not provide any scientific basis for the opinion that every exposure is more likely than not a substantial factor in the cause of a disease. Instead, Dr. Mark's causation theory assumes what it wants to prove and ignores the difference between exposure to more potent amosite asbestos and less potent chrysotile asbestos.¹⁹ It also ignores the substantial differences between brake dust and chrysotile that is well established in the scientific literature, including that most of the chrysotile fibers in brakes are converted to harmless forsterite as a result of the braking process. And the theory cannot *exclude* as causative any above-background exposure within the latency period.

It is contrary to scientific methodology and common sense to presume that the presence of a disease is sufficient to prove its cause. *See In re Agent Orange Prod. Liab. Litig.*, 373 F. Supp. 2d 7, 32 (E.D.N.Y. 2005) (“The fact that diseases were experienced by some people after spraying does not suffice to prove general or specific causation, i.e., that the harm resulted to individuals because of the spraying. *Post hoc ergo propter hoc* remains a logical fallacy

¹⁸ Webster's Collegiate Dictionary (10th ed. 1998) defines “hypothesis” as “a tentative assumption made in order to draw out and test its logical or empirical consequences.”

¹⁹ “Asbestos” does not refer to a manufactured product, but is a generic term for a family of minerals with different physical and chemical properties and disease-causing potential. *Pathology of Asbestos-Associated Diseases* (Oury, T., Roggli, V. et al. eds., 3d ed. 2014); Springer-Verlag Berlin Heidelberg, 2014, at Chapters 1, 5. There are two major asbestos fiber types or families: amphibole and chrysotile. *Id.* at Chapter 1. The two asbestos fiber types have important mineralogical and structural differences that substantially influence toxicity. *Id.* at Chapters 1, 5. “Epidemiological and laboratory studies have demonstrated a clear connection between exposure to amphibole asbestos fibers and the subsequent development of [malignant mesothelioma].” M. Carbone, R. Dodson, et al., *Malignant Mesothelioma: Facts, Myths and Hypotheses*, Journal of Cellular Physiology, 2011. [Exhibit H] On the other hand, there is a continuing and very vigorous debate over whether pure chrysotile, *even at very high doses*, ever causes mesothelioma. *See* Aff. of D. Garabrant at ¶14. [Doc. No. 296-3] Chrysotile was the only type of asbestos used in Bendix brakes.

unacceptable in toxic tort law. Proof of causal connection depends primarily upon substantial epidemiological and other scientific data Anecdotal evidence of the kind charged in the complaint and set out below cannot suffice to prove cause and effect."); *Cartwright v. Home Depot U.S.A.*, 936 F. Supp. 900, 906 (M.D. Fla. 1996) ("The logical fallacy *post hoc ergo propter hoc* has been recognized for generations. The near exclusive reliance by Plaintiff's experts on this fallacy further undermines any confidence that their opinions are the result of the scientific method."). Dr. Mark's theory of causation is not testable and opinions based on the theory should be excluded. *See* Vol. III, Mark Deposition, at 214 [Exhibit B] (in which Dr. Mark testified that the distinction between a trivial exposure and a special exposure to asbestos cannot be tested because "you cannot test concepts").

B. The Theory Is not Supported by Peer-Reviewed Scientific Publications.

As noted above, whether a scientific method has survived peer review in the relevant scientific community is an important element in assessing its reliability. *Daubert*, 509 U.S. at 593-94. While not dispositive, "submission to the scrutiny of the scientific community is a component of 'good science,' in part because it increases the likelihood that substantive flaws in methodology will be detected." *Daubert*, 509 U.S. at 593. But Dr. Mark cannot point to *any* peer-reviewed scientific publication that states that every exposure to asbestos above background contributes to the development of someone's mesothelioma. *Buntz v. Borg Warner Corporation, et al.*, Trial Testimony of Eugene Mark taken on 5/30/14, p. 1641, attached as **Exhibit N**; *Morrison, et al., v. Alfa Laval, Inc., et al.*, deposition testimony of Eugene J. Mark, M.D. taken on 3/8/11 p. 244, attached as **Exhibit O**. Further, he is not aware of any peer-reviewed medical and scientific literature that uses the term "special exposure" to describe asbestos exposures as a cause of mesothelioma. *See* Vol. I, Mark Deposition, at 48-49. [Doc. No. 296-1]

As no peer-reviewed scientific publication shows that every exposure to asbestos is

causative of mesothelioma, Honeywell expects Dr. Mark to rely on molecular pathology for his opinion that every special exposure contributed to Mr. Yates' mesothelioma. *See Angelo v. 3M Company, et al.*, Case No. CV 567637, County of Cuyahoga, Ohio (April 7, 2008) (in which Dr. Mark testified that molecular pathology supports the view that ever individual exposure causes mesothelioma), attached as **Exhibit P**. Dr. Mark believes molecular pathology is the gold standard for determining causation. Vol. III, Mark Deposition, at 223-24 [Exhibit B]; *Hampton v. Ford Motor Company, et al.*, Trial Testimony of Eugene Mark, MD, 8.19.14, p. 1213-14. [Doc. No. 296-5] Yet, he does not have any molecular pathology articles in his report in this case that demonstrate the level of exposure to brake dust necessary to cause mesothelioma. In fact, Dr. Mark testified that molecular studies *cannot* demonstrate the level of exposure to brake dust necessary to cause mesothelioma because such studies "do not deal with levels of dust." Vol. III, Mark Deposition, at 251. [Exhibit B]

In contrast, Dr. Mark agreed that epidemiology studies demonstrate the level of exposure necessary to cause mesothelioma in humans. *See id.* at 251-52 (in which Dr. Mark testified that epidemiology is one of the many pieces of evidence that help demonstrate levels of exposure necessary to cause mesothelioma in humans). As discussed in more detail below, epidemiologic literature on the relationship between vehicle repair and mesothelioma concludes that neither vehicle repair nor brake work at any level increases the risk of mesothelioma. Aff. of D. Garabrant at ¶¶15,19. [Doc. No. 296-3]

Dr. Mark has made no serious attempt to rebut the well-established epidemiological literature. It may be scientifically supportable to depend on methodologies other than epidemiology when there is insufficient epidemiology to reach a conclusion on whether a causative relationship exists. However, expert opinion that both fails to address and directly

contradicts a well-established and consistent body of epidemiological literature is not reliable.

C. The Theory Has no Known Accuracy or Error Rate.

Another factor in determining if a scientific method is reliable is its “known or potential rate of error.” *Daubert*, 509 U.S. at 594. Because Dr. Mark’s causation theory cannot be proven true or false, it is impossible to establish one. *See Vol. IV, Mark Deposition*, at 34-45 [Exhibit C] (in which Dr. Mark testified that he does not “understand how one would go about” submitting his special exposure theory to examination for rate of error); *see also Anderson v. Ford Motor Co.*, 950 F.Supp.2d 1217, 1224 (D. Utah 2013) (finding that the “every exposure” opinion has no known rate of error) [Doc. No. 296-24]; *Davidson, et al. v. Georgia Pacific LLC, et al.*, Civil Action No. 12-1463 (D. Ct. W.D. La. Shreveport Div., July 14, 2014) (concluding that the “every exposure” theory “is not testable, and consequently cannot have an error rate, thus failing to satisfy two *Daubert* factors”), attached as **Exhibit Q**. Indeed, a theory ought to be inherently suspect when, as here, it is incapable of excluding as causative *any* above-background exposure within the latency period. *See Willis v. Georgia-Pacific LLC, f/k/a Georgia-Pacific Corporation*, Testimony of Dr. Mark, Circuit Court of Sangamon County, Illinois, August 3, 2009, at 111-12 (in which Dr. Mark testified that it is hopeless to look at the exposure history of a person with mesothelioma and separate out specific exposures to determine which were causative of the disease), attached as **Exhibit R**.

D. The Theory Has no Scientific Standards to Govern its Application.

A court should also consider “the existence and maintenance of standards controlling the technique’s operation.” *Daubert*, 509 U.S. at 594. There are none governing Dr. Mark’s every “special” exposure theory. His “technique” is utterly standardless. The every-exposure theory provides exactly the kind of two-headed coin needed to find *every* exposure causative in every case, no matter the truth or science behind the opinion.

E. The Theory Is not Generally Accepted in the Relevant Scientific Community.

This Court should take account of the degree to which the relevant scientific community accepts the method as scientifically reliable. *Daubert*, 509 U.S. at 594. “Widespread acceptance can be an important factor in ruling particular evidence admissible, and a known technique which has been able to attract only minimal support within the community, may properly be viewed with skepticism.” *Id.* (citation and quotation omitted). In this case, no peer-reviewed scientific publications embrace the every-exposure theory and no experts in the medical and scientific community use the term “special exposure” to describe asbestos exposures as causative of mesothelioma. *See Mosqueira, et al. v. Alcoa Packing & Supply, Inc.*, Deposition Testimony of Eugene Mark, M.D., taken on 4/30/13, p. 141, attached as **Exhibit S**; Vol. I, Mark Deposition, at 48. [Doc. No. 296-1]

Dr. Mark’s opinions are exactly the type that *Daubert* and its progeny reject. Individualized “knowledge and experience” cannot form the basis of admissible testimony under *Daubert* because such opinions lack any correlation with the scientific method, as applied in any particular scientific discipline (*e.g.*, epidemiology, pathology, toxicology), including controls, and, as a result, are misleading and unreliable because they are immune from testing or reproduction. Dr. Mark’s opinions are unreliable works of advocacy, impermissibly shifting the burden to defendants to disprove Plaintiffs’ cause of action. This flies in the face of *Daubert*, and the Court should reject it.

III. DR. MARK DOES NOT RELY ON THE GENERALLY ACCEPTED METHODOLOGY FOR DETERMINING CAUSATION

The New York Court of Appeals previously articulated the appropriate scientific methodology for establishing causation in the context of a toxic tort case (benzene exposure). In

Parker v. Mobil Oil Corp.,²⁰ the court stated that the scientifically-reliable methodology for drawing a sound conclusion as to the relationship between a disease and a specific factor suspected of causing the disease, as recommended by the World Health Organization and the National Academy of Sciences, is as follows:

- (1) a determination of the plaintiff's level of exposure to the toxin in question;
- (2) from a review of the scientific literature, proof that the toxin is capable of producing that illness, or general causation, and the level of exposure to the toxin which will produce that illness must be ascertained; and
- (3) the establishment of specific causation by demonstrating the probability that the toxin caused the particular plaintiff's illness, which involves weighing the possibility of other causes.²¹

This Court should not allow Dr. Mark to bypass the generally accepted scientific methodology for determining causation by opining that “every exposure to asbestos” above background was a substantial contributing factor to the development of Mr. Yates’ alleged mesothelioma.

A. Dr. Mark Has Not Determined Mr. Yates’ Level of Exposure to Asbestos from Bendix Brakes

Here, Dr. Mark has not calculated Mr. Yates’ alleged dose of chrysotile asbestos from Bendix brake dust and any quantification he may attempt to provide at trial will be grossly misstated. *See supra* Argument Section I. Instead, he asserts the fiction, disguised in terms of “special exposures,” that if there were exposures to asbestos (regardless of how low the dose) and a disease was diagnosed, then *ipso facto* the cause of the disease was the exposures to asbestos. This fails the first step of the generally accepted *Parker* methodology. *See also Juni*, at 39 (citations omitted) (“Although there may be causes where it will be difficult or impossible to

²⁰ 793 N.Y.S.2d 434, 437, 16 A.D.3d 648 (App. Div. 2005) [Doc. No. 296-6]

²¹ “Causation in toxic tort cases is discussed in terms of general and specific causation. General causation is whether a substance is capable of causing a particular injury or condition in the general population, while specific causation is whether a substance caused a particular individual’s injury.” *In re Breast Implant Litig.*, 11 F. Supp. 2d 1217, 1224 (D. Colo. 1998).

quantify a plaintiff's exposure to a toxin, the *Parker* Court held that some quantification is nonetheless necessary for a plaintiff to prove causation.”).

B. Dr. Mark Has Not Established General Causation

The general causation issue in this case is whether a low-dose exposure to *brake dust* is scientifically known to cause pleural mesothelioma. It is not, as Dr. Mark prefers to characterize it, whether exposure to “asbestos,” regardless of the type, can cause mesothelioma. *See Juni*, at 28. [Exhibit F] Epidemiology is fundamental to establishing causal relationships between exposure and disease. Epidemiology is the study of the patterns of diseases and their causes in human populations. Aff. of D. Garabrant at ¶3. [Doc. No. 296-3] Epidemiologic studies are the primary scientific method for testing theories of disease causation in human populations because they include well described protocols for collecting data and making measurements. *Id.* Plaintiffs' retained expert, Dr. Arnold Brody, has specifically agreed that epidemiology is the “gold standard” for asserting causation.²²

²² Q. You would agree that epidemiology studies are the best tool – the best tool to determine whether products used at a certain level of exposure create a risk, true?

A. Yes.

Q. And given that, epidemiology studies are the best tool to determine whether exposure to asbestos containing brakes or products creates an increased risk of mesothelioma?

A. And you're having this discussion with an epidemiologist, whether or not they'd want to argue with you, I don't know. But I agree with what you are saying.

Q. Even though you're not an epidemiologist, you consider epidemiology to be very important, right?

A. Sure.

Q. In fact, you would certainly call epidemiology the gold standard, right?

A. For causation, that's correct.

Herring v. Autozone, Trial Testimony of Dr. Brody taken on July 13, 2010, at p. 140, attached as **Exhibit T**.

Courts have acknowledged the widespread acceptance and use of epidemiology in public health: “The reliability of expert testimony founded on reasoning from epidemiological data is generally a fit subject for judicial notice; epidemiology is a well-established branch of science and medicine, and epidemiological evidence has been accepted in numerous cases.”²³ “In the absence of an understanding of the biological and pathological mechanisms by which disease develops, epidemiological evidence is the most valid type of scientific evidence of toxic causation.”²⁴

Epidemiologic literature on the relationship between vehicle repair and mesothelioma concludes that neither vehicle repair nor brake work at any level increases the risk of mesothelioma. Aff. of D. Garabrant at ¶¶15,19. [Doc. No. 296-3] A number of epidemiological studies have been conducted examining the relationship between vehicle repair and mesothelioma. *Id.* at ¶15.²⁵ These studies have failed to demonstrate such an association. *Id.* at

²³ *DeLuca v. Merrell Dow Pharms.*, 911 F.2d 941, 954 (3d Cir. 1990); *see also Brock v. Merrell Dow Pharms., Inc.*, 874 F.2d 307, 311 (5th Cir.), modified by 884 F.2d 166 (5th Cir. 1989) (“Undoubtedly, the most useful and conclusive type of evidence in a case such as this is epidemiological studies.”); *Allen v. Pa. Eng’g Corp.*, 102 F.3d 194, 197 (5th Cir. 1996) (“[T]he most useful and conclusive type of evidence in a case such as this [ethylene oxide toxic tort claim] is epidemiological studies.”); *Hall v. Baxter Healthcare Corp.*, 947 F. Supp. 1387, 1403 (D. Or. 1996) (“[T]he existence or nonexistence of relevant epidemiology can be a significant factor in proving general causation in toxic tort cases.”); *Conde v. Velsicol Chem. Corp.*, 804 F. Supp. 972, 1025-26 (S.D. Ohio 1992) (“Epidemiologic studies are the primary generally accepted methodology for demonstrating a causal relation between a chemical compound and a set of symptoms or a disease.”); *Norris v. Baxter Healthcare Corp.*, 397 F.3d 878, 882 (10th Cir. 2005) (“We agree with the district court that epidemiology is the best evidence of general causation in a toxic tort case.”); *In re Breast Implant Litig.*, 11 F. Supp. 2d 1217, 1224 (D. Colo. 1998) (“The most important evidence relied upon by scientists to determine whether an agent (such as breast implants) cause [sic] disease is controlled epidemiologic studies.”); *Allison v. McGhan Med. Corp.*, 184 F.3d 1300, 1316 (11th Cir. 1999) (“[I]n the face of controlled, population-based epidemiological studies which find otherwise, these case studies [of alleged breast implant injury] pale in comparison.”).

²⁴ *In re Breast Implant Litig.*, 11 F. Supp. 2d 1217, 1224 (D. Colo. 1998) (citation omitted); *see also Hollander v. Sandoz Pharms. Corp.*, 95 F. Supp. 2d 1230 (W.D. Okla. 2000).

²⁵ See e.g., McDonald & McDonald, “Malignant Mesothelioma in North America,” 46 *Cancer* 1650 (1980); Teta, “Mesothelioma in Connecticut, 1955-1977,” 25 *J. Occup. Med.* 749 (1983); Spirtas, “Mesothelioma Risk Related to Occupational or Other Asbestos Exposure: Preliminary Results From Case Control Study,” 122 *Am. J. Epidemiol.* 518 (1985); Coggon, “Differences in Occupational Mortality from Pleural Cancer, Pleural Cancer, and Asbestos,” 52 *Occup. Environ. Med.* 775 (1995); Teschke, “Mesothelioma Surveillance to Locate Sources of Exposures to Asbestos,” 88 *Can. J. Public Health* 163 (1997); Spirtas, “Malignant Mesothelioma: Attributable Risk of Asbestos Exposure,” 51 *Occup. Environ. Med.* 804 (1994); Woitowitz & Rodelsperger, “Mesothelioma Among Car

¶15. As Dr. Garabrant explains, based on the more than twenty epidemiological studies to date, it “is implausible that there is increased risk of either pleural or peritoneal mesothelioma among motor vehicle mechanics while these studies have failed to discover it.” *Id.* at ¶ 19. Similarly, case-control studies, cohort studies, proportional mortality ratio studies, and meta-analyses have been performed to determine relative risk of mesothelioma among automobile mechanics and found no increased risk. *Id.* at ¶¶5-12.

Dr. Mark has made no serious attempt to rebut the well-established epidemiological literature and has no information that Mr. Yates’ alleged level of exposure to brake dust is similar to what is reported in the peer-reviewed literature as necessary to cause mesothelioma (a difficult proposition to be sure because the literature does not demonstrate that brake dust causes mesothelioma), and thus fails to prove general causation.

C. Dr. Mark Has Not Established Specific Causation

Furthermore, where the literature establishes that the product, chemical or substance of interest is generally capable of causing the disease of interest, the next step is to determine whether the toxic effects are known to occur under circumstances relevant to the specific individual being evaluated. This involves comparison of the individual’s specific exposure circumstances to the exposures reported in the scientific literature, and includes such case-specific factors as the frequency of the person’s exposure(s), the amount and duration of the

Mechanics,” 38 *Ann. Occup. Hyg.* 635 (1994); Hodgson, “Mesothelioma Mortality in Britain: Patterns by Birth Cohort and Occupation,” 41 *Ann. Occup. Hyg.* 129 (Suppl. 1 1997); Agudo, “Occupation and Risk of Malignant Pleural Mesothelioma: A Case Control Study in Spain,” 37 *Am. J. Indus. Med.* 159 (2000); Hessel, et al., “Mesothelioma Among Brake Mechanics: An Expanded Analysis of a Case Control Study,” 24 *Risk Anal.* 547 (2004); Rake, C., Gilham, C., Hatch, J., Darnton, A., Hodgson, J., Peto, J. “Occupational, domestic and environmental mesothelioma risks in the British population: a case-control study,” *British Journal of Cancer*, 1-9, 2009. There are meta-analysis and survey studies that further confirm the strength and consistency of the peer-reviewed literature. Wong, “Malignant Mesothelioma and Asbestos Exposure Among Auto Mechanics: Appraisal of Scientific Evidence,” 34 *Reg. Toxicol. Pharmacol.* 170-177 (2001); Goodman, et al., “Mesothelioma and Lung Cancer Among Motor Vehicle Mechanics: A Meta-analysis,” 48 *Ann. Occup. Hyg.* 309 (2004); Laden et al., “Lung Cancer and Mesothelioma Among Male Automobile Mechanics: A Review,” 19 *Rev. Environ. Health* 39 (2004).

exposure(s), and the dose of the chemical or substance actually received, if any. In the context of asbestos, it is important to compare the fiber type(s), length(s), and diameter(s) to which the person was exposed with those involved in the study. *See Juni*, at 32 [Exhibit F] (“Absent knowledge of the amount, duration, or frequency of Juni’s exposures to asbestos-containing dust from brakes, [Plaintiff’s expert] thus failed to provide a scientific expression of Juni’s exposure [and]… failed to prove specific causation.”). The “every exposure” theory ignores all of these factors.

Dr. Mark has not provided any reliable measurement of exposure and has not stated the level of exposure necessary to cause injury. His arbitrary determination of a special exposure based on evidence of *any* exposure to Bendix brakes during Mr. Yates’ life, “absent any quantification of the exposure, is insufficient to constitute a scientific expression of his exposure.” *Juni*, at 33. [Exhibit F]

Further, the opinion that every exposure constitutes a substantial contributing factor because the exposures *cumulatively* caused the disease is irreconcilable with the well-recognized scientific requirement that the amount, duration, and frequency of exposure be considered in assessing the sufficiency of an exposure in increasing the risk of developing disease. *Id.* at 35. “It is not the association between mesothelioma and asbestos that is in issue when determining legal causation, but rather whether a particular defendant may be held liable for having caused a person’s mesothelioma, which depends on the person’s exposure to the defendant’s product.” *Id.* (citations omitted).

Determining specific causation also requires weighing the possibility of other causes. Dr. Mark did not weigh the possibility of other causes, specifically amosite asbestos from thermal insulation in the Navy. For these reasons, Dr. Mark fails to prove specific causation. His

opinions on causation are unreliable and contrary to established principles for discerning substantial factor causation, and should be excluded.

IV. NUMEROUS COURTS HAVE REJECTED ANY-EXPOSURE TESTIMONY IN MESOTHELIOMA CASES

This Court should join the ranks of jurisdictions around the country that reject anecdotal and speculative causation opinions neither based on, nor supported by, generally accepted scientific methodologies for establishing causation.

In a case involving alleged exposures to brake dust, the United States District Court for the District of Utah rejected the every exposure opinion as “inadmissible speculation … devoid of responsible scientific support.” *Smith v. Ford Motor Co.*, Order Granting Defendant’s *Daubert* Motion to Exclude Expert Testimony of Samuel Hammar, 2013 WL 214378, at *2 (D. Utah Jan. 18, 2013). The court found that Plaintiff’s expert’s testimony, which mirrors the opinions Dr. Mark is expected to offer here, was “unsupported by sufficient, or reliable scientific research, data, investigations or studies,” and was thus inadmissible under Rule 702. *Id.* at *2. Plaintiff’s expert based his causation opinion on the premise that as he could not rule any exposures “out,” he would simply rule all exposures “in,” concluding that “the plaintiff’s mesothelioma was caused by his total and cumulative exposure to asbestos, with all exposures and all products playing a contributing role.” *Id.* at *3 (quotation marks omitted). The court ruled that such testimony did “virtually nothing to help the trier of fact decide the all-important question of specific causation,” as it lacked any support, such as facts or data, aside from general conclusions. *Id.* at *4. The court granted the defendant’s motion to exclude the testimony because it lacked scientific foundation and was designed merely for litigation. *Id.* at *5.

Similarly, in *Anderson v. Ford Motor Co.*, the Court also rejected the “every exposure” opinion on the basis that “it does not meet the standards set by Rule 702 and *Daubert*.” 950 F.

Supp. 2d 1217, 1222 (D. Utah 2013). Citing the *Smith* decision, the Court agreed that the “every exposure” opinion is “inadmissible speculation that is devoid of responsible scientific support.” *Id.* at 1223 (quotation marks omitted) (citing *Smith v. Ford Motor Co.*, 2013 WL 214378). The Court found fault in the lack of underlying facts and data, particularly Plaintiff’s experts inability “to point to any studies showing that ‘any exposure’ to asbestos above the background level of asbestos in the ambient air is causal of mesothelioma,” and the lack of data on the level of exposure to asbestos necessary to cause mesothelioma or information on Plaintiff’s exposure to Defendants’ products. *Id.* at 1223-24. Additionally, the Court, evaluating the *Daubert* factors, particularly took issue with the fact that the theory cannot be easily tested and cannot determine which fibers or which exposure caused the mesothelioma. *Id.* at 1224.

Even in cases not specifically involving brake dust, courts reject the theory Dr. Mark espouses. In December 2014, the United States District Court for the Northern District of Illinois, Eastern Division, excluded the “each and every exposure” theory of causation. Specifically, the court stated that it “is not an acceptable approach for a causation expert” to state simply that each exposure is a substantial contribution to the cumulative total exposure and therefore, contributed to cause disease. *Krik v. Crane Co., et al.*, December 22, 2014, at 8 (citing *Smith* for the proposition that “where a causation opinion was based upon the assumption that all asbestos exposures were contributing factors, it ‘asks too much from too little evidence as far as the law is concerned.’”), attached as **Exhibit U**.²⁶

²⁶ The court in *Krik* also carefully distinguished an adverse ruling by Judge Robreno of the Asbestos Multi-District Litigation Court. See *Schumacher v. Antico (In re Asbestos Prods. Liab. Litig.)*, No. 10-cv-01627, 2010 U.S. Dist. LEXIS 144831 (E.D. Pa. Nov. 2, 2010). Like *Krik*, the instant case involves different types of allegedly asbestos-containing materials and products than in *Schumacher*. And, as the court in *Krik* pointed out, the *Schumacher* ruling was expressly limited to the admissibility of expert testimony in light of the facts and record in that particular case.

In *Sclafani v. Air & Land Liquid Sys. Corp.*, 2013 WL 2477077 (C.D. Cal. May 9, 2013), the court examined and rejected pursuant to *Daubert* the each and every fiber theory put forth by Dr. Arnold Brody, Plaintiff's retained expert in this case. The court recognized that the expert's theory, which is indistinguishable from the testimony offered by Dr. Mark, avoided any meaningful burden of proving liability:

First, as a legal issue, accepting Dr. Brody's opinion as true would render the 'substantial factor' prong of the causation test meaningless. If 'each and every exposure' is a substantial factor in leading to the development of mesothelioma, then all a plaintiff would have to do is prove 1) that he had mesothelioma; and 2) that he was exposed to asbestos at some time. Similar opinions have been rejected on precisely this basis.

Id. at 6 (citing *Lindstrom v. A-C Prod. Liab. Trust*, 424 F.3d 488, 492-3 (6th Cir. 2005)). (upholding the district court's exclusion of an "each and every exposure" opinion and holding that "[m]inimal exposure" to a defendant's product is insufficient[,]" as "[a] holding to the contrary would permit imposition of liability on the manufacturer of any product with which a worker had the briefest of encounters on a single occasion."); *see also Lund v. Air & Liquid Systems Corp.*, United States District Court for the Central District of California, April 7, 2015 (handwritten opinion that the "each and every exposure" theory is insufficient . . . to establish legally sufficient exposure."), attached as **Exhibit V**.

In *Moeller v. Garlock Sealing Techs., LLC*, the Sixth Circuit Court of Appeals held that Plaintiff's expert's opinion that "[a]ll of his exposures - and one can't differentiate them - contributed to his developing his mesothelioma" was insufficient to establish that the defendant's product was a substantial factor in causing the decedent's disease. 660 F.3d 950, 954 (6th Cir. 2011). The Court found that the evidence presented by the plaintiff was insufficient for a jury to infer that the exposure to defendant's product was a substantial cause of the plaintiff's

mesothelioma because the plaintiff “presented no evidence quantifying [Plaintiff’s] exposure to asbestos from [the defendant’s products.]” *Id.* at 955.

The United States District Court for the Western District of Louisiana, Shreveport Division, rejected Plaintiff’s expert’s testimony and concluded that the “every exposure” theory “is not testable, and consequently cannot have an error rate, thus failing to satisfy two *Daubert* factors.” *Davidson, et al. v. Georgia Pacific LLC, et al.*, Civil Action No. 12-1463, at *10 (D. Ct. W.D. La. Shreveport Div., July 14, 2014), attached as **Exhibit Q**. These holdings are all consistent with the ruling of the Supreme Court of Pennsylvania, which labeled the theory a “fiction,” and in “irreconcilable conflict with itself.” *See Betz v. Pneumo Abex, LLC*, 44 A.3d 27 (Pa. 2012) (applying a *Frye* analysis). As the Court observed:

In the present case, [the trial judge] was right to be circumspect about the scientific methodology underlying the any-exposure opinion. **He spent considerable time listening to the attorneys’ arguments but was unable to discern a coherent methodology supporting the notion that every single fiber from among, potentially, millions is substantially causative of disease.** . . . As the United States Supreme Court has explained: A dose-response curve shows the relationship between different exposure levels and the risk of cancer [or any other disease] associated with those exposure levels. Generally, exposure to higher levels carries with it a higher risk, and exposure to lower levels is accompanied by a reduced risk. . . . Given both the controversial nature of the any-exposure opinion and its potency in asbestos litigation, Judge Colville pursued the sensible course of permitting evidentiary development so that he could make an informed assessment.

Id. at 53-54 (internal citations omitted) (emphasis added).²⁷

²⁷ See also *Martin v. Cincinnati Gas & Elec. Co.*, 561 F.3d 439, 443 (6th Cir. 2009) (noting that plaintiffs’ “every exposure” hypothesis would make every incidental exposure to asbestos a substantial factor and render the substantial factor test “meaningless.”); *Lindstrom v. A-C Prod. Liab. Trust*, 424 F.3d 488 (6th Cir. 2005) (requiring that plaintiff make a showing with respect to *each* defendant that the its product was a substantial factor in plaintiff’s injury and not simply state in a conclusory fashion that every exposure to asbestos was a substantial factor in plaintiff’s illness); *Comardelle v. Pennsylvania General Insurance, et al.*, 2015 WL 64279, *8 (E.D. La. 2015) (finding plaintiff’s expert’s specific causation opinions to be “unreliable and inadmissible” and “not based on or tied to the specific facts and circumstances of any of Comardelle’s exposures to asbestos and it elides any differences or nuances of duration, concentration, exposure, and the properties of the fibers to which he may have been exposed”); *Butler v. Union Carbide Corp.*, 310 Ga.App. 21, 24 (2011) (affirming the lower court’s ruling that plaintiff’s expert’s opinion that “each and every exposure” substantially contributed to the development of mesothelioma did

CONCLUSION

WHEREFORE, Defendant Honeywell International Inc. respectfully requests that this Court preclude Dr. Mark's testimony that exposure to brake dust and/or chrysotile from brakes causes pleural mesothelioma or that every exposure contributes to the development of pleural mesothelioma. Alternatively, Honeywell understands that the Court has set aside June 2-3, 2015 for an evidentiary hearing to consider further evidence on the generally accepted scientific methodologies at issue and those methodologies Dr. Mark claims to rely upon to reach his opinions.

not "properly utilize[e] the scientific method to make scientifically valid decisions in reaching his specific causation opinion as required by *Daubert*" and emphasizing that the expert's opinion was neither accepted by the general scientific community nor based on reliable science); *Daly v. Arvinmeritor, Inc., et al.*, No. 07-19211 (Fl. Cir. Ct. Nov. 9, 2007) (finding plaintiffs' reliance on their expert testimony that "any exposure above background" causes mesothelioma is "inconsistent with the intention of the Florida legislature" which specifically included the word "substantial" since the expert's theory disregarded the inclusion of this term and treated all exposures the same); *Mannahan v. Caterpillar, Inc., et al.*, No. 12-CI-02070, Feb. 13, 2014 Order, *1-2 (Jeff. Cir. Ct., Div. 12, Ky.) (granting Defendants' motions to exclude plaintiff's experts' causation testimony based on the each and every exposure theory reasoning that "[e]xpert testimony that any and all exposures contributed to Plaintiff's mesothelioma does not establish that exposure to Defendants' products was a substantial factor in causing Plaintiff's disease.") [Doc. No. 296-20]; Jan. 20, 2004 Order, *In re Asbestos Litig.*, No. 2004-03964 (Tex. 11th Dist. Ct. Harris Cnty.) (concluding that Dr. Mark's testimony that any exposure to any type of asbestos increases the risk of mesothelioma is not "measurable" or "scientifically verifiable") [Doc. No. 296-22]; *Bostic v. Georgia-Pacific Corp.*, 439 S.W.3d 332, 338 (Tx. 2014) (holding that "in mesothelioma cases proof of 'some exposure' or 'any exposure' alone will not suffice to establish causation," requiring "[d]efendant-specific evidence relating to the approximate dose to which the plaintiff was exposed, coupled with evidence that the dose was a substantial factor in causing the asbestos-related disease."); *Kovary v. Honeywell Int., Inc.*, No. 10-494-GW-CW, Order at 5-6 (C.D. Cal. March 17, 2014) (excluding Dr. Mark's every and every "special" exposure opinion and finding it to be an "unhelpful tautology" that fails to explain how he reaches his conclusions), attached as **Exhibit W**.

This the 8th day of May, 2015.

/s/ H. Lee Davis, Jr.
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CERTIFICATE OF SERVICE

I hereby certify that on May 8, 2015, I electronically filed, on behalf of the Defendant, Honeywell International Inc., the foregoing ***DAUBERT MOTION AND BRIEF TO PRECLUDE EVIDENCE SUGGESTING THAT BRAKE DUST CAUSES PLEURAL MESOTHELIOMA OR THAT “EVERY EXPOSURE COUNTS”*** with the Clerk of the United States District Court for the Eastern District of North Carolina using the CM/ECF system which will send notification of such filing to all counsel of record.

Respectfully submitted,

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